
The Impact of Child Maltreatment on Juvenile Delinquency

By

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Abstract

Background: Child delinquency is associated with adult criminal activity. Prior research suggests that a history of child maltreatment may increase the risk of a child's involvement in delinquent acts. The objective of this study is to examine the association between child maltreatment and delinquency, and assess how race is associated.

Methods: This is a prospective cohort study of 5,873 children from the National Survey of Child and Adolescent Well-Being (NSCAW II) of children involved in child maltreatment or neglect investigations by Child Protective Services in the United States between 2008 and 2012. Logistic and Poisson regression models were used to examine the association between child maltreatment and delinquency.

Results: Children who experienced physical abuse and neglect had at least three times the odds of committing any form of delinquent acts compared to children who experienced no abuse. Children of other races (American Indian/Alaskan Native, Asian, Native Hawaiian or Pacific Islander) had a four times higher odds of committing any delinquent act, compared to African American children. Older children (aged 11-17 years old) were almost 6 times as likely to commit a severe delinquent act compared to children aged 6-10 years old. There was no significant difference between White children compared to African American children.

Conclusion: Child maltreatment may be associated with an increased risk of developing juvenile delinquency. Public health programs should address the underlying determinants of child maltreatment to reduce the development of juvenile delinquency. Programs should look to target children of other races with protective interventions against child maltreatment.

Introduction

Child Maltreatment

Child maltreatment is defined by the World Health Organization (WHO) as physical, emotional, sexual abuse or neglect and exploitation of a child aged less than 18, resulting in harm or possible harm to their health, development or dignity.¹ In the United States, child maltreatment is prevalent and is a significant public health concern^{2,3} even though some researchers believe that the current child maltreatment estimates are underreported. Underreporting has been attributed to the multiple definitions of maltreatment among different organizations, poor data quality and sampling biases.^{2,4,5} In 2013, the Children's Bureau of the Department of Health and Human Services reported that over 3 million children were the focus of maltreatment investigations by Child Protective Service (CPS).⁹ However, between 2009 and 2013, the rate of maltreatment decreased by 3.8%. The current rate of child maltreatment in the US is 9.1 cases per 1,000 children.⁹

Child maltreatment is associated with substance abuse, risky sexual behaviors⁶ and delinquency.⁷ Beyond the health and social consequences of child maltreatment, there are economic impacts, including the costs of hospitalization, mental health treatment, child welfare, and longer-term health costs.^{1,8} Neglect is the most common form of maltreatment, making up nearly 80% of all CPS cases. Physical abuse and sexual abuse victims are seen in 18% and 9% of reported cases.⁹

Children under the age of one have the highest rate of all maltreatment (23.1 per 1,000 children).⁹ Increasing age has been associated with a decreased incidence of child maltreatment. For example, victimization rates among children aged 3, 10, and 17 years were 11, 7.2 and 3.5 per 1,000 respectively. However, African American children continue to have the highest rates of maltreatment (14.6 per 1,000) compared to their White counterparts (8.1 per 1,000).⁹

While the decrease in rates of all forms of maltreatment has been homogenous for children of all ages, the rates for African American children have remained high.⁹ After adjusting for age, socioeconomic status, family structure and number of children in the household, Sedlak et al., found that African American children have an elevated risk of physical abuse and emotional maltreatment. They also noted that a higher numbers of African American children live in families of lower socio-economic status and in homes that participate in public assistance programs, which may lead to the higher rates of maltreatment.¹⁰ Also, using the National Child Abuse and Neglect Data Systems (NCANDS) data Ards et al., found a 60% higher maltreatment rate among African Americans compared to Whites.¹¹

Delinquency

Juvenile delinquency is defined by the Title 18 of the U.S. Code as a violation of the law by a person who under the age of 18 years that would have been a crime if committed by an adult.¹² Delinquency is an issue that is becoming increasingly important, as the under 18 year-population in the US continues to rise, with an estimated 78 million children by 2020.^{13,14} Children younger than 15 account for almost 40% of arrests for vandalism, simple assault and disorderly conduct and 57% for arson.¹⁵ Reducing the delinquency rate of all child/adolescent acts of crimes has therefore become a national priority and one of Healthy People 2020's goals.³

Similar to maltreatment, African American children and adolescents are disproportionately represented in the criminal justice system.^{14,16,17} Estimates from the Illinois Criminal Justice Information Authority indicated that African American youths are arrested at a five times higher rate than their white counterparts.¹⁶ Of the 42 counties in the Illinois study, African American youths were a larger proportion of those arrested in more than 80% of these

counties.¹⁶ Delinquency has been associated with negative outcomes such as risky sexual behaviors, failing/dropping out of school, drug/alcohol misuse, arrest and incarceration.¹⁴

Child Maltreatment and Delinquency

Research has linked maltreatment to serious consequences on the health and development of children, leading into adulthood. These include mental illness, delinquency and death.^{7,16,18,19} Several studies in the U.S. identify an association between child maltreatment and delinquency.^{7,19-21} Among children who have a substantiated claim of maltreatment the rate of delinquency is 47% higher than in non-maltreated children.²² Widom et al. reviewed substantiated abuse and neglect cases from the courts in the Northwestern region of the US, and found that delinquent acts were 4.8 times more likely to occur in children who had experienced any form of abuse or neglect. Additionally, children exposed to maltreatment were 11 times more likely to be charged with a violent crime compared to non-maltreated children.¹⁹

In several studies Widom explored how maltreated children and their matched unexposed controls were involved in delinquent acts or behavior.^{19,23-25} Controls were matched on age, sex, race and socioeconomic status. Findings from these studies show that children who were maltreated had a 26% rate for committing delinquent acts, while the controls had a 17% rate, a 53% increase in criminal behavior.^{23,24}

A general consensus in research is that child maltreatment estimates are usually underreported, underscoring that child maltreatment may be occurring at a much larger scale and that the healthcare and child protection systems may possibly be missing unidentified negative outcomes in these unreported cases.¹⁴ One of such negative outcomes, delinquency, may have adverse effects on individuals, families and communities.¹⁵

Race, socioeconomic status, the home environment, and parental substance abuse among many others are some of the major contributors that underlie the pathway to delinquency.^{26,27}

Health disparities in delinquency for children of color remain one of the most significant public health challenges of this century^{2,11,14,16} and because their elimination is a top priority for the current healthcare delivery system³, there is no shortage of evidence to indicate that racial disparities exist. For example, the well-established longitudinal study of children, adolescents, their caregivers and caseworkers and their experiences in the child welfare system the National Survey of Child and Adolescent Well-being (NSCAW), from which the data for this study come from, seeks to identify these underlying determinants of adverse health outcomes in children.²⁸

This study examined the relationship between different forms of child maltreatment (sexual abuse, physical abuse and neglect) and juvenile delinquency. This study asks: Does physical maltreatment, sexual maltreatment or neglect increase delinquent behavior in children involved with child welfare? The study has the following hypotheses for the study results:

1. Children who experience physical maltreatment will have increased odds of subsequent delinquent behavior after controlling for child demographic characteristics (child's age, sex, race, level of education, poverty level, rural or urban environment, number of children in the household), caregiver demographics (age, race, level of education) and substance abuse.
2. Children who experience sexual maltreatment will have increased odds of developing delinquent behavior, controlling for child demographic characteristics (child's age, sex, race, level of education, poverty level, rural or urban environment, number of children in the household), caregiver demographics (age, race, level of education) and substance abuse.
3. Children who experience any form of neglect will have increased odds of subsequent delinquent behavior, controlling for child demographic characteristics (child's age, sex, race, level of education, poverty level, rural or urban environment, number of children in

the household), caregiver demographics (age, race, level of education) and substance abuse.

4. African American children who experience any form of maltreatment will have a higher odds of delinquent behavior compared to children of other races.

The results of this study will be useful to both policy makers and public health program staff by identifying the connections between maltreatment and delinquency in children and in developing interventions to reduce juvenile delinquency among children in the United States.

Methods

Study design

This study used data from Wave I and Wave III of the National Survey of Child and Adolescent Wellbeing II (NSCAW II) dataset. NSCAW II is a longitudinal study of a cohort of 5,873 children, aged birth to 17.5 years, who have been referred to U.S. welfare agencies and had completed investigation of possible maltreatment during the sampling time frame of February 2008 to April 2009.²⁸ Agencies from eight states were not included because the agency staff is required to contact the caregiver instead of the study staff. NSCAW II used the 8 of the original 9 primary sampling units (PSUs) used in NSCAW I created from reports of children who were investigated or assessed for child abuse or neglect. A two-stage stratified sample design was used, first by selecting 83 counties from the 8 PSUs, and then selecting children based on the age criteria (0-17.5 years) and closed CPS investigations. Data for Wave I and III were carried out by in-person interviews or assessments of parents, permanent caregivers, foster parents/custodial kin caregivers, children and caseworkers. The baseline interviews (Wave I) were completed between April 2008 to December 2009 and Wave III interviews were completed between June 2011 and ended December 2012.²⁸

Weighted Analysis

Analysis weights were created by NSCAW II in stages according to the two stages of the sample design, accounting for the probability during county selection and child selection within each county. The weights were also used to reduce the likelihood of nonresponse bias that occurred as a result of replacements PSUs and sampling. The results of this study were generated using the weight NANALWT3 to analyze the combined data of Wave 1 and Wave III to ensure unbiased estimates.²⁸

Sample

In the current data analyses, both the independent variable of interest-child maltreatment and the dependent variable-delinquency were categorical. Child maltreatment questions from Wave I and delinquency questions from Wave III were used for the analyses. Those not assessed on the questions of delinquency were excluded from the sample (n=912). The eligible sample was composed of children without missing values for covariates used in analyses (n=691). This sample is meant to be representative of U.S. children ages 6 to 17.5 years old that have had a maltreatment investigation during the sampling period. The sample of cases included both cases that received on-going services and cases that did not, either because they were not substantiated or because it was determined that services were not necessary. The University of North Carolina at Chapel Hill Institutional Review Board approved all procedures for this study.

Measures

i. Physical abuse, Sexual abuse and Neglect

During interviews, caseworkers were asked to identify what type of abuse or neglect had a current report using the Limited Maltreatment Classification System (L-MCS) (1993)²⁹ The maltreatment variables were originally separate in Wave I, but were recoded to be one new

variable (chmal) defined as 0=No, 1=Physical Maltreatment, 2=Sexual Maltreatment and 3=Neglect. Neglect includes supervisory neglect (lack of supervision) and physical neglect (failure to provide).

ii. Delinquency

NSCAW II measured delinquency using the Modified Self-Report of Delinquency (1980) by Elliot and Ageton³⁰ and the Denver Youth Survey (1995)³¹ identifying participation in delinquent or criminal acts.²⁸ Raw scores were computed for children 11 years and older. During Wave III, 36 questions were asked about youth involvement in severe (felony assault, theft, robbery, fraud) and minor (minor theft, illegal services, property damage, public disorder and status offenses) criminal activities, which were later recoded into a new variable (delinq) (0=no) to indicate that the child had no record of delinquent behavior, (1=minor) participation in minor crimes and (2=severe) participation in severe crimes.

iii. Covariates

Sociodemographic variables from Wave I included the child's age, sex, race, level of education, poverty level, rural or urban environment, number of children in the household and caregiver's age, race, level of education and present substance abuse. Child age was divided into two categories: 6-10 and 11+ years of age. Race for children and caregivers was categorized as Non-Hispanic Black, Non-Hispanic White, Hispanic and Other. Child education was recoded as: Less than Elementary, Elementary School, Middle School and High School or more. Poverty Level was divided into four categories: < 50%, 50% -<100%, 100%-200% and >200 percent and PSU urbanicity was categorized as Rural and Urban. Caregiver age was categorized as: <35 years, 35-44 years, 45-54 years and >54 years of age, education was recoded as: < High School, High School and > High School. Exposure to current caregiver substance abuse was recoded as a dichotomous variable (1=yes).

Statistical analysis

To analyze these data, descriptive statistics were first run to describe the characteristics of the population using STATA 12 (Stata Corporation, College Station, TX). The first table outlines the sociodemographic characteristics of the sample. The second table looks at the unadjusted relationship between any form of maltreatment and delinquency. The final table shows three outcomes of delinquency (any delinquency, minor, and severe) that examine the association between the primary exposure; child maltreatment, and the primary outcome; delinquency using weighted logistic regression analysis, controlling for the effects of child's age, sex, race, level of education, poverty level, rural or urban environment, number of children in the household and caregiver's age, race, level of education and present substance abuse. A Poisson model was used to show the number of independent delinquent acts committed by the children in the sample during the data collection period. This method of statistical analysis was appropriate to explain and make predictions on the relationship between child maltreatment and delinquency. Each categorical variable was summarized with frequencies and percentages, and their covariate associations with maltreatment were analyzed with Pearson's chi-square tests. All tests were conducted at a 95% confidence level.

Results

Child Characteristics

Table 1 presents the socio-demographic comparisons of all children in the study stratified by maltreatment type. Though the sample for this study consisted of children aged 6-17.5 years old, children aged 11 to 17.5 years, accounted for nearly 60% of the sample. Non-Hispanic White children made up the majority (38.7%) of the study population while children in the Other category, consisting of American Indian/Alaskan Native, Asian, Native Hawaiian or Pacific Islander, had the smallest representation (7.9%). The 11-17.5 age group experienced higher

levels of physical abuse, sexual abuse and neglect (65.7%, 67.6% and 53.7%, respectively) compared to children 6-10 years old. Nearly 3 in 5 of the children with closed investigations were females and almost 80% of children live in urban areas. The proportion of children in elementary school with physical abuse, sexual abuse or neglect was significantly higher than any other grade level, (64.1%, 63.7% and 68.4%, respectively).

Most children lived in homes with incomes 50-100% of the federal poverty level (33.4%) and less than 18% were supported by incomes >200% of the poverty level. Caregivers in the age category had the highest proportion in the <35 years (40.6%) and the numbers consistently decreasing, with those aged >54 years only accounting for just under 7% of caregivers. The proportion of parents who had a history of substance abuse was significantly different across the various forms of child maltreatment, with neglect having the highest proportion of parental substance abuse (physical-6%, sexual-1% and neglect-13.2%; [Table 1](#)). There were no other significant demographic differences across the forms of child maltreatment.

Bivariate analysis of the child maltreatment and delinquency indicated that there is no significant association between child maltreatment and delinquency ($p=0.1112$; [Table 2](#)).

Multivariate Analysis of Delinquency

Table 3 presents the final adjusted associations between child maltreatment and delinquency. In the first model, children who experienced physical abuse (AOR: 3.2, $p<0.05$) and neglect (AOR: 3.5, $p<0.005$) had higher odds to commit any form of delinquency compared to children who experience no abuse at all. Children living at greater than 200% of the federal poverty level were 0.2 times less likely to commit any delinquent act compared to those at less than 50% of the federal poverty level (AOR: 0.2, $p<0.005$). Children of Other races (American Indian/Alaskan Native, Asian, Native Hawaiian or Pacific Islander) were 3.9 times as likely to

commit any delinquent act as compared to African American children, (AOR: 3.87, $p=0.05$).

Children living in households of 5 or more children were less likely to commit a delinquent act than those with only one child in the home (AOR: 0.3, $p<0.05$). There were no other significant differences between child maltreatment and delinquency when controlling for sociodemographic variables.

In Model 2, physically abused and neglected children were shown to be 3 times more likely to commit any delinquent act compared to those who experienced no abuse (AOR: 3.2, $p<0.05$; AOR: 3.5, $p<0.005$). However, children who were physically abused were more likely to commit some form of minor delinquency whereas neglected children were more likely to commit some form of severe delinquency (AOR: 3.1, $p<0.05$; AOR: 5.3, $p<0.005$). Living at greater than 200% of the federal poverty line was shown to be a protective factor against committing a minor delinquent act as compared to children living less than 50% of the federal poverty line (AOR: 0.2, $p<0.05$). Children who live in a household of 5 or more children were less likely to commit a minor delinquent act compared to children with one child in the home (AOR: 0.3, $p<0.05$).

In Model 3, children who experienced neglect were again more likely to have committed a severe delinquent act than those who did not experience maltreatment (AOR: 5.3, $p<0.005$). Similar to model 2, a child living at 200% of the federal poverty level had a tenth the odds of committing a severe delinquent act than those who were living less than 50% below the federal poverty level (AOR: 0.1, $p<0.05$). Children age 11-17.5 years old had a little under 6 times the odds of committing a severe delinquent act than children age 6-10 years old (AOR: 5.8, $p<0.005$). A child with a high school educated caregiver 2.5 times less likely to commit a severe delinquent act compared to a child who had a caregiver with less than a high school education (AOR: 2.5, $p<0.05$). Children with a caregiver age 54 years and above were 6.6 times more

likely to commit severe delinquent acts than children with a caregiver below the age of 35 (AOR: 6.6, $p<0.05$).

The Poisson regression (Table 4) suggests that children with a Hispanic caregiver had 2.3 times the risk of committing a delinquent act as compared to children with caregivers who were White (IRR: 2.3, $p<0.05$). Children with caregivers aged 45-54 years of age were 0.5 times less likely to commit a delinquent act (IRR: 0.5, $p=0.05$) and children of caregivers older than 54 were 3.1 times more likely to commit a delinquent act (IRR: 3.1, $p<0.005$), compared to those less than 35 years old. Child poverty was also a significant factor in developing delinquency, with those living at greater than 200% of the poverty level 0.3 times less likely to commit a delinquent act than children living at less than 50% of the federal poverty level (IRR: 0.3, $p<0.05$). Children living in households with 5 or more children were 0.2 times less likely to commit a delinquent act than a home with one child (IRR: 0.3, $p<0.005$). Education was also a significant factor, with children with a high school education 2 times more likely to commit a delinquent than those in elementary school (IRR: 2.1, $p<0.05$). Children of the Other race category had 7 times the risk of committing a delinquent act than African American children (IRR: 7.0, $p<0.005$). A child's age played a significant role with those aged 11-17.5 years of age having 3.2 times the risk of committing a delinquent act than children aged 6-10 years of age (IRR: 3.2, $p<0.005$).

Discussion

This study is an attempt to investigate the relationship between different forms of child maltreatment, specifically sexual abuse, physical abuse and neglect with juvenile delinquency and how that relationship may be associated with race. To further understand this relationship, this study explored delinquent acts committed among children who had been referred to U.S. welfare agencies with a completed investigation of possible abuse.

The first goal of this study was to determine if there was a relationship between child maltreatment and delinquency. Of the 691 children included in this study, there were no significant association between maltreatment and delinquency without adjusting for socio-demographic variables. These results may differ from previous studies, because the study population of children from Child Protective Service investigations. Results could also clash due to other studies using more specific definitions of delinquent behavior,³² while this study categorized delinquent behavior into 3 (minor, severe, and any delinquency) and used self-reported delinquency (stealing a car, selling drugs or arson), using official juvenile court records, or delinquency petitions.^{22, 32} Secondly, this study investigated the effects of sociodemographic characteristics on the likelihood of committing a delinquent act among a population known to child welfare. Counter to prior research suggesting that the incidence of maltreatment decreases with age, the proportion of children in elementary school with physical abuse, sexual abuse or neglect was significantly higher than any other grade level.⁹ Children living at greater than 200% of the federal poverty level and those with 5 or more children in the household were protected against committing a delinquent act. This could be supported by findings from other research noting that children living in higher socioeconomic areas having better neighborhoods, more positive role models and peer relationships^{10, 20} and children living with 5 or more children in the home possibly have higher rates of supervision.

Several other factors were shown to influence how maltreatment has an impact on behavior. In addition to neglect and physical maltreatment, child age (11-17.5 years) as well as higher caregiver age (>54 years) and lower educational level (< High School) increased the likelihood of a child committing a delinquent act. Contrary to prior research identifying labeling bias, reporting bias and overrepresentation, African Americans did not have the highest rates of maltreatment.^{10,11,16,17} Education was also a significant factor, with children with a high school education 2 times more likely to commit a delinquent than those in elementary school, possibly

because they have more freedom to engage in risky activities.^{6,7} A child in the race category of Other (American Indian/Alaskan Native, Asian, Native Hawaiian or Pacific Islander) increased the child's odds of maltreatment, due possibly to racial differences in reporting and substantiation of reports.¹¹

There are limitations to the current study. Questions of delinquency were only asked of children aged 11-17.5 years old; therefore the study only applies to children in this group. The identification of physical abuse, sexual abuse and neglect did not take into consideration the severity of abuse or the number/duration of occurrences that could possibly have an important impact on the delinquency outcome. Intimate partner violence (IPV), caregiver or child depression could not be evaluated as covariates^{27,33} due to a high number of missing data, therefore, this study did not account for those environmental measures that may also influence later delinquent behavior.

However, the data do provide for a range of individual and family environment factors of children involved in the U.S. welfare population. Using these data allows for a longitudinal perspective from childhood to adolescence and the influence of various environmental factors on child maltreatment and delinquency.

Even with these limitations, this study suggests that child maltreatment is associated with later delinquent behavior in children involved with child welfare. The findings of this study provide additional data on risk and protective factors of children in the U.S. child welfare system by suggesting that maltreatment alone is not the predictive factor of delinquency, but a child's entire environment may hold the key. Future work is needed to understand the factors outside of maltreatment that not only lead to involvement in delinquent acts but other negative outcomes. It would also be informative to compare children placed in foster care and those who remained in the home, to see if the environmental change has an added effect on developing delinquency.

Furthermore, such research would improve interventions and treatment programs for children who have experienced maltreatment.

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Appendix

Table 1. Sociodemographic Characteristics of Children 6-17.5 years old referred to U.S. welfare agencies with a completed investigation of possible maltreatment from February 2008 to April 2009 (n=691)

Characteristics	None (n=149)		Physical Abuse (n=167)		Sexual Abuse (n=68)		Neglect (n=307)		Total (n=691)	
	N	%	N	%	N	%	N	%	N	%
Child's Age (yrs)										
6-10	63	42.1	59	35.3	22	32.4%	142	46.2%	285	41.4%
11+	86	35.3	108	65.7	46	67.6%	165	53.7%	405	58.6%
Child's Gender										
Male	60	40.3%	70	41.6%	30	44.3%	140	45.6%	299	43.3%
Female	89	59.7%	100	58.3%	38	55.7%	167	54.4%	392	56.7%
Child Race										
Non Hispanic Black	31	20.9%	32	18.9%	15	21.6%	66	21.6%	144	20.8%
Non Hispanic White	58	38.9%	70	41.9%	38	55.6%	101	33.0%	267	38.7%
Hispanic	48	32.1%	51	30.8%	10	14.3%	117	38.0%	226	32.7%
Other	12	8.1%	14	8.4%	6	8.5%	23	7.4%	54	7.9%
Child Education										
Less than Elementary School	0	0.0%	2	1.0%	1	1.8%	1	0.2%	4	0.5%
Elementary School	85	57.2%	107	64.1%	43	63.7%	210	68.4%	446	65.5%
Middle School	44	29.5%	44	26.2%	16	24.0%	67	21.7%	171	24.7%
High School or more	20	13.2%	15	8.7%	7	10.3%	30	9.7%	71	10.3%
Child Poverty Level										
< 50%	35	23.4%	18	10.6%	14	20.8%	95	30.8%	161	23.3%
50% - <100%	40	26.9%	64	38.3%	24	36.1%	102	33.3%	231	33.4%
100 – 200%	48	31.9%	45	27.2%	22	32.2%	61	19.7%	175	25.4%
>200%	27	17.8%	40	23.8%	7	10.9%	50	16.2%	124	17.9%
Rural/Urban Environment										
Rural	28	19.0%	48	28.4%	23	33.5%	58	18.8%	156	22.6%
Urban	121	81.0%	120	71.6%	45	66.5%	249	81.2%	535	77.4%
Number of Children in Household										
1 Child	54	35.9%	56	33.5%	19	27.4%	73	23.8%	201	29.1%
2 Children	30	20.3%	34	20.3%	25	37.2%	60	19.7%	150	21.7%
3 Children	26	17.6%	37	22.1%	19	28.5%	71	23.1%	153	22.2%
4 Children	23	15.1%	25	15.2%	3	5.0%	51	16.7%	103	14.9%
5 or more Children	17	11.1%	15	9.0%	1	1.8%	51	16.7%	84	12.2%
Caregiver Age										
< 35 yrs	63	41.7%	66	39.6%	22	32.8%	130	42.3%	281	40.6%
35-44 yrs	46	30.6%	71	42.5%	24	36.0%	110	35.7%	251	36.3%
45-54 yrs	28	18.7%	24	14.5%	11	16.4%	49	16.1%	113	16.3%
>54 yrs	13	8.9%	6	3.4%	10	14.7%	18	5.8%	47	6.8%
Caregiver Education										
< High School	31	20.8%	54	32.1%	11	15.8%	108	35.3%	204	29.5%
High School	61	41.2%	53	31.9%	39	57.6%	118	38.3%	271	39.3%
> High School	57	37.9%	60	36.0%	18	26.6%	81	26.4%	216	31.2%
Caregiver Race										
Non Hispanic Black	28	18.8%	23	13.6%	15	21.9%	69	22.6%	135	19.5%
Non Hispanic White	80	53.5%	87	51.8%	34	50.7%	113	37.0%	314	45.5%
Hispanic	30	20.1%	51	30.5%	14	20.0%	109	35.4%	203	29.4%
Other	11	7.6%	7	4.1%	5	7.3%	15	5.0%	38	5.6%
Caregiver Substance Abuse										
No	119	80.0%	157	94.0%	67	99.0%	267	86.8%	610	88.3%
Yes	30	20.0%	10	6.0%	1	1.0%	40	13.2%	81	11.7%

Note: All frequencies are weighted; Percentages are column percentages

Table 2. Association between Severity of Delinquency Among Children Age 6-17.5 years old with Any Form of Maltreatment

Type of Maltreatment	Type of Delinquency							
	None		Minor		Severe		Total	
	N	%	N	%	N	%	N	%
No Maltreatment	117	78.1%	26	17.3%	7	4.5%	149	100.0%
Physical Maltreatment	107	64.0%	51	30.7%	9	5.3%	167	100.0%
Sexual Maltreatment	47	69.1%	12	17.6%	9	13.3%	68	100.0%
Neglect	186	60.7%	91	29.5%	30	9.8%	307	100.0%
Total	457	66.1%	180	26.0%	55	7.9%	691	100.00%

Note: Percentages are row percentages; p=0.1112

Table 3: Logistic Regression Models of Delinquency on Child Maltreatment and Other Sociodemographic Characteristics

Characteristics	Any Delinquency		Minor Delinquency		Severe Delinquency	
	Odds Ratio	P value	Odds Ratio	P value	Odds Ratio	P value
Child Maltreatment						
None (ref.)						
Physical	3.2***	0.01	3.1**	0.02	2.7*	0.06
Sexual	1.4	0.51	0.8	0.73	2.8	0.18
Neglect	3.5***	0.00	3.1**	0.01	5.3***	0.00
Child's Age (yrs)						
6-10 (ref.)						
11+	2.5*	0.08	2.1	0.22	5.8***	0.00
Child's Gender						
Male (ref.)						
Female	0.9	0.60	0.9	0.74	0.8	0.56
Child Race						
Non Hispanic Black (ref.)						
Non Hispanic White	2.2	0.24	2.0	0.35	4.8	0.45
Hispanic	2.9	0.13	2.6	0.15	12.2	0.23
Other	3.9**	0.05	2.9	0.15	16.1	0.15
Child Education						
Less than Elementary School (ref.)						
Elementary School	0.4	0.49	0.3	0.42	0.7	0.78
Middle School	0.6	0.66	0.5	0.61	0.7	0.81
High School or more	2.6	0.46	2.4	0.57	3.1	0.45
Child Poverty Level						
< 50% (ref.)						
50% - <100%	0.8	0.63	0.8	0.62	0.9	0.81
100 – 200%	0.6	0.11	0.6	0.25	0.4	0.11
>200%	0.2***	0.00	0.3**	0.03	0.1**	0.01
Rural/Urban Environment						
Rural (ref.)						
Urban	1.1	0.83	1.0	0.96	1.5	0.60
Number of Children in Household						
1 Child (ref.)						
2 Children	1.2	0.63	1.3	0.57	0.9	0.83
3 Children	1.3	0.47	1.5	0.31	0.8	0.68
4 Children	0.8	0.54	0.8	0.60	0.6	0.37
5 or more Children	0.3***	0.01	0.2**	0.01	0.3	0.19
Caregiver Age						
< 35 yrs (ref.)						
35-44 yrs	1.2	0.57	1.3	0.56	1.4	0.48
45-54 yrs	0.7	0.43	0.7	0.37	0.7	0.67
>54 yrs	2.1	0.12	1.3	0.61	6.6**	0.01
Caregiver Education						
< High School (ref.)						
High School	1.1	0.76	0.9	0.84	2.5**	0.04
> High School	1.1	0.85	0.9	0.82	1.9	0.27
Caregiver Race						
Non Hispanic Black (ref.)						
Non Hispanic White	0.3	0.14	0.3	0.17	0.2	0.35
Hispanic	0.3	0.14	0.3	0.10	0.2	0.38
Other	0.4	0.26	0.3	0.12	0.4	0.65
Caregiver Substance Abuse						
No (ref.)						
Yes	0.8	0.63	0.8	0.62	0.8	0.79

Notes: ref – reference group; *p<0.10, **p<0.05, ***p<0.01

Table 4. Poisson Regression Models on Delinquency and Maltreatment and Other Sociodemographic Characteristics

Characteristics	Any Delinquent Act	
	Incidence Risk Ratio	P value
Child Maltreatment		
None (ref.)		
Physical	1.2	0.51
Sexual	0.7	0.32
Neglect	1.4	0.13
Child's Age (yrs)		
6-10 (ref.)		
11+	3.2	0.00***
Child's Gender		
Male (ref.)		
Female	1.1	0.80
Child Race		
Non Hispanic Black (ref.)		
Non Hispanic White	1.9	0.44
Hispanic	2.3	0.32
Other	7.0	0.00***
Child Education		
Less than Elementary School	1.2	0.78
Elementary School (ref.)		
Middle School	0.9	0.83
High School or more	2.1	0.02**
Child Poverty Level		
< 50% (ref.)		
50% - <100%	0.8	0.48
100 – 200%	0.9	0.60
>200%	0.3	0.01**
Rural/Urban Environment		
Rural (ref.)		
Urban	0.84	0.45
Number of Children in Household		
1 Child (ref.)		
2 Children	0.7	0.30
3 Children	1.1	0.80
4 Children	0.8	0.56
5 or more Children	0.3	0.00***
Caregiver Age		
< 35 yrs (ref.)		
35-44 yrs	1.2	0.46
45-54 yrs	0.5	0.07*
>54 yrs	3.1	0.00***
Caregiver Education		
< High School (ref.)		
High School	0.7	0.08*
> High School	0.9	0.64
Caregiver Race		
Non Hispanic Black	3.4	0.13
Non Hispanic White (ref.)		
Hispanic	2.3	0.00***
Other	0.8	0.77
Caregiver Substance Abuse		
No (ref.)		
Yes	0.7	0.39

Notes: ref – reference group; *p<0.10, **p<0.05, ***p<0.01